



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,227	01/28/2004	William Welch	50269-0721	2598
73/066      7590      10/10/2008 HICKMAN PALERMO TRUONG & BECKER LLP/Yahoo! Inc. 2055 Gateway Place Suite 550 San Jose, CA 95110-1083				
EXAMINER				
HOANG, HIEU T				
ART UNIT		PAPER NUMBER		
2452				
MAIL DATE		DELIVERY MODE		
10/10/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/767,227

**Applicant(s)**

WELCH ET AL.

**Examiner**

HIEU T. HOANG

**Art Unit**

2152

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 4-7 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-7 and 21-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S5108)  
Paper No(s)/Mail Date 9/10/08
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This office action is in response to the amendment filed on 08/29/2008.
2. Claims 1, 2, 4-7, 21-24 are pending.

***Response to Amendments***

3. The objections to claims 4 and 22 are withdrawn due to the amendment.
4. Previous U.S.C 101 and 112 rejections are withdrawn due to the amendment.

***Response to Arguments***

5. Applicant's arguments have been fully considered but they are unpersuasive. Applicant argues that the prior art does not teach selecting an existing data stream based on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy. The examiner respectfully disagrees. The prior art teaches a hierarchical policy tree regarding resource management of data classes' traffics (Packer, 3.1, building traffic classification tree, fig. 2A, 2B, col. 12 lines 33-65, classes of traffics mapped to a tree of bandwidth resource policy). Applicant asserts that in Packer bandwidth policy evaluation in a policy classification tree is looked up but not based on relative position within the tree. This is not true (see Packer, col. 11 line 39 to col. 12 line 16, bandwidth classification tree is an *N-ary tree with its nodes ordered by specificity*, each "tier" or layer in the tree corresponds is ordered to a *orthogonal paradigm* at a specificity level (such as organizational departments, and service types).

Packer also discloses that unused bandwidth can be shared among different traffic classes or family of traffic classes (col. 14 lines 32-35, soft isolation allows sharing of unused bandwidth among classes). Therefore, one skilled in the art would appreciate that bandwidth allocation can be reallocated as taught by Packer among different traffic classes or families of traffic classes on a same layer within the bandwidth classification tree, in order words, based on relative locations of the traffic classes in the tree.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 4-7, 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaffer et al. (6,757,277, hereafter Shaffer), in view of Packer et al. (US 6,046,980, hereafter Packer).

8. For claim 21, Shaffer discloses in a data network configured to transmit data streams at negotiated transfer rates, wherein a negotiated transfer rate is limited to bandwidth apportioned to one of a plurality of data classes for each data stream, an improvement comprising:

allocating bandwidth to the data streams by negotiating a transfer rate for each of the plurality of data streams from a plurality of acceptable transfer rates, the plurality of

acceptable transfer rates provided by plug-ins prior to transmitting each data stream at the negotiated transfer rate (col. 3 lines 6-34, col. 4 lines 21-32, audio, video coding provides acceptable transfer rates (or bandwidth per stream) for each type of traffic, col. 5 lines 10-21, plug-ins are coding algorithms provided to the user device, each algorithm has an associated rate).

Shaffer does not explicitly disclose:

each class of the plurality of data classes corresponding to a node in a hierarchical policy tree; detecting termination of a particular data stream; in response to detecting termination of the particular data stream, determining whether another data stream from said particular data class is able to use bandwidth that was allocated to said particular data stream; in response to detecting that no data stream from said particular class is able to use bandwidth that was allocated to said particular data stream, performing the steps of (a) selecting an existing data stream based, at least in part, on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy tree; and (b) increasing the bandwidth allocated to said existing data stream.

However, Packer discloses:

each class of the plurality of data classes corresponding to a node in a hierarchical policy tree (col. 14 lines 40-51, classification tree for traffic classes, 3.2, policies);

detecting termination of a particular data stream; in response to detecting termination of the particular data stream, determining whether another data stream from said particular data class is able to use bandwidth that was allocated to said particular data stream (col. 13 lines 45-60, excess information rate EIR allows freed bandwidth from a terminated flow to be reallocated to other flows, until demand is satisfied meaning no need for more bandwidth for other flows, based on bandwidth availability);

in response to detecting that no data stream from said particular class is able to use bandwidth that was allocated to said particular data stream (col. 13 lines 45-60, other flows' bandwidth demand is satisfied), performing the steps of

(a) selecting an existing data stream based, at least in part, on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy tree; and (b) increasing the bandwidth allocated to said existing data stream (col. 11 line 39 to col. 12 line 16, bandwidth classification tree is an *N-ary tree with its nodes ordered by specificity*, each "tier" or layer in the tree corresponds is ordered to a *orthogonal paradigm* at a specificity level; col. 14 lines 32-37, soft isolation, free or unused bandwidth can be allocated or shared among different data classes relatively located in a traffic classification tree).

It would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Shaffer and Packer to take advantage of available bandwidth resources that has not been consumed by allocating excess bandwidth to data stream as available (Packer, col. 13 lines 41-43).

9. For claim 24, Shaffer discloses a method for allocating bandwidth of a data network to a plurality of data streams, comprising:

specifying apportionment of the bandwidth to a plurality of data classes (col. 5 lines 55-59, voice and data bandwidth allocation);

receiving a plurality of data streams for a plurality of plug-ins; wherein each plug-in of the plurality of plug-ins is associated with a data class of the plurality of data classes (fig. 2, video, audio, data modules are plug-ins);

wherein each data stream is associated with one of the plurality of data classes (col. 3 lines 6-34, data stream inherently has information identifying whether it is audio, video or data);

from a plurality of acceptable transfer rates for each associated plug-in, negotiating a transfer rate for each data stream (fig. 2, col. 4 lines 41-63, each module negotiates which coding algorithm to use so that transfer rate is within thresholds);

wherein the transfer rate of the data stream for each plug-in is limited to the bandwidth apportioned to the data class associated with the particular plug-in (col. 5 lines 55-59, each stream transfer rate is limited by allocated rate of the class that the stream belongs); and

transmitting the data streams on the data network at the negotiated transfer rates (col. 5 lines 43-45, adjusting coding algorithm to negotiated rate and transmitting at that rate).

Shaffer does not explicitly disclose:

each class of the plurality of data classes corresponding to a node in a hierarchical policy tree; detecting termination of a particular data stream; in response to detecting termination of the particular data stream, determining whether another data stream from said particular data class is able to use bandwidth that was allocated to said particular data stream; in response to detecting that no data stream from said particular class is able to use bandwidth that was allocated to said particular data stream, performing the steps of (a) selecting an existing data stream based, at least in part, on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy tree; and (b) increasing the bandwidth allocated to said existing data stream.

However, Packer discloses:

each class of the plurality of data classes corresponding to a node in a hierarchical policy tree (col. 14 lines 40-51, classification tree for traffic classes, 3.2, policies);

detecting termination of a particular data stream; in response to detecting termination of the particular data stream, determining whether another data stream from said particular data class is able to use bandwidth that was allocated to said particular data stream (col. 13 lines 45-60, excess information rate EIR allows freed bandwidth from a terminated flow to be reallocated to other flows, until demand is satisfied meaning no need for more bandwidth for other flows, based on bandwidth availability);



in response to detecting that no data stream from said particular class is able to use bandwidth that was allocated to said particular data stream (col. 13 lines 45-60, other flows' bandwidth demand is satisfied), performing the steps of

(a) selecting an existing data stream based, at least in part, on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy tree; and (b) increasing the bandwidth allocated to said existing data stream (col. 11 line 39 to col. 12 line 16, bandwidth classification tree is an *N-ary tree with its nodes ordered by specificity*, each "tier" or layer in the tree corresponds is ordered to a *orthogonal paradigm* at a specificity level; col. 14 lines 32-37, soft isolation, free or unused bandwidth can be allocated or shared among different data classes relatively located in a traffic classification tree; col. 14 lines 32-37, soft isolation, free or unused bandwidth can be allocated or shared among different data classes in a traffic classification tree).

It would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Shaffer and Packer to take advantage of available bandwidth resources that has not been consumed by allocating excess bandwidth to data stream as available (Packer, col. 13 lines 41-43).

10. For claim 1, Shaffer discloses a method for allocating bandwidth of a data network to a plurality of data streams, comprising:

specifying apportionment of the bandwidth to a plurality of data classes (col. 5 lines 57-58, data and voice bandwidth apportionment, col.4 lines 45-48, fig. 4, 5, bandwidth threshold X, Y of traffics);

receiving a plurality of data streams (fig. 2, receiving video, audio or data traffics are classes);

determining a particular data classes that corresponds to a particular data stream, wherein one or more other data streams that are associated with the particular data class are currently being transmitted (col. 3 lines 5-25, col. 5 lines 10-20, each stream's class is recognized by available or supported audio, video coding algorithms, col. 5 lines 61-62, many streams in one class).

determining a plurality of acceptable transfer rates for the particular data stream, negotiating a transfer rate for the particular data stream from the plurality of acceptable transfer rates (col. 4 lines 21-32, col. 5 lines 10-20, audio, video coding algorithms provide acceptable transfer rates (or bandwidth per stream) for each type of traffic),

Wherein negotiating a transfer rate for the particular data stream includes selecting a transfer rate that

(b) does not cause the transfer rate of the one or more data streams to go below minimum acceptable transfer rates of the one or more other data streams (col. 6 lines 13-44, bandwidth is stepped up when current monitored rate falls below a threshold for all streams in a class); and

transmitting the particular data stream on the data network at the negotiated transfer rate (col. 5 lines 43-45, adjusting coding algorithm to negotiated rate and transmitting at that rate);

Shaffer does not explicitly disclose the transfer rate (a) does not exceed bandwidth apportioned to the particular data class that is not being used by the one or more other data streams;

each class of the plurality of data classes corresponding to a node in a hierarchical policy tree; detecting termination of a particular data stream; in response to detecting termination of the particular data stream, determining whether another data stream from said particular data class is able to use bandwidth that was allocated to said particular data stream; in response to detecting that no data stream from said particular class is able to use bandwidth that was allocated to said particular data stream, performing the steps of (a) selecting an existing data stream based, at least in part, on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy tree; and (b) increasing the bandwidth allocated to said existing data stream.

However, Packer discloses that excess bandwidth can be allocated to a flow based on available bandwidth or bandwidth that has not been consumed (col. 13 lines 38-60)

each class of the plurality of data classes corresponding to a node in a hierarchical policy tree (col. 14 lines 40-51, classification tree for traffic classes, 3.2, policies);

detecting termination of a particular data stream; in response to detecting termination of the particular data stream, determining whether another data stream from said particular data class is able to use bandwidth that was allocated to said particular data stream (col. 13 lines 45-60, excess information rate EIR allows freed bandwidth from a terminated flow to be reallocated to other flows, until demand is satisfied meaning no need for more bandwidth for other flows, based on bandwidth availability);

in response to detecting that no data stream from said particular class is able to use bandwidth that was allocated to said particular data stream (col. 13 lines 45-60, other flows' bandwidth demand is satisfied), performing the steps of

(a) selecting an existing data stream based, at least in part, on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy tree; and (b) increasing the bandwidth allocated to said existing data stream (col. 11 line 39 to col. 12 line 16, bandwidth classification tree is an *N-ary tree with its nodes ordered by specificity*, each "tier" or layer in the tree corresponds is ordered to a *orthogonal paradigm* at a specificity level; col. 14 lines 32-37, soft isolation, free or unused bandwidth can be allocated or shared among different data classes relatively located in a traffic classification tree; col. 14 lines 32-37, soft isolation, free or unused

bandwidth can be allocated or shared among different data classes in a traffic classification tree).

It would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Shaffer and Packer to take advantage of available bandwidth resources that has not been consumed by allocating excess bandwidth to data stream as available (Packer, col. 13 lines 41-43).

11. For claim 2, Shaffer-Packer discloses the invention as in claim 1. Shaffer-Packer further discloses the step of receiving comprises steps of: receiving stream annotations associated with each of the data streams; using a stream annotation associated with the particular data stream to select a plug-in of a plurality of plug-ins; activating the plug-in to receive each data stream (Shaffer, fig. 2, col. 3 lines 6-33, audio, video inherently has annotations in the header identifying sender, receiver, protocol type, codec type, resolution, quality etc., a plug-in is a coding software for each stream such as codec)

12. For claim 4, Shaffer-Packer discloses the invention as in claim 1. Shaffer-Packer further discloses the step of transmitting comprises steps of: transforming information content within the particular data stream to the negotiated transfer rate (Shaffer, col. 3 lines 6-34, coding is transforming); and transmitting the data stream on the data network at the negotiated transfer rate (Shaffer, col. 5 lines 43-45).

13. For claim 5, Shaffer-Packer discloses the invention as in claim 4. Shaffer-Packer further discloses the step of transforming comprises a step of thinning, transcoding or decimating the particular data stream to the negotiated transfer rate (Shaffer, col. 3 lines 6-34, audio/video coding).

14. For claim 6, Shaffer-Packer discloses the invention as in claim 1. Shaffer-Packer further discloses the transfer rate is a first transfer rate, the method further comprising steps of: determining an amount of unallocated bandwidth on the data network (Shaffer, col. 5 line 58-col. 6 line 2); negotiating a second transfer rate for a first data stream, wherein the second transfer rate uses the unallocated bandwidth (Shaffer, col. 6 line 25-35, increasing bandwidth usage by using more bandwidth-required coding due to available bandwidth); transforming the first data stream to the negotiated second transfer rate; and transmitting the first data stream on the data network at the second transfer rate (Shaffer, col. 6 lines 34-35).

15. For claim 7, Shaffer-Packer discloses the invention as in claim 6. Shaffer-Packer further discloses steps of: receiving a second data stream; determining a second data class that corresponds to the second data stream; negotiating a third transfer rate for the first data stream, wherein the third transfer rate is limited to the bandwidth apportioned to the second data class; negotiating a fourth transfer rate for the second data stream, wherein the fourth transfer rate is limited to the bandwidth apportioned to the second data class; and transmitting on the data network, the first data stream at the

third transfer rate and the second a second data stream at the fourth transfer rate (Shaffer, col. 5 line 22-col. 6 line 34, the second data stream and first data stream can just belong to a same class and their transfer rates can be adjusted to a third and fourth transfer rate dynamically according to bandwidth threshold and maximum bandwidth of their class).

16. For claim 22, Shaffer discloses a system for allocating bandwidth of a data network to a plurality of data streams, comprising:

One or more processors (fig. 3, processor 302);

Means, operatively coupled to the one or more processors, for specifying apportionment of the bandwidth to a plurality of data classes (col. 5 lines 57-58, data and voice bandwidth apportionment, col.4 lines 45-48, fig. 4, 5, bandwidth threshold X, Y of traffics);

means, operatively coupled to the one or more processors, for receiving a plurality of data streams (fig. 2, receiving video, audio or data traffics are classes);

means, operatively coupled to the one or more processors, for determining a particular data class that corresponds to a particular data stream (col. 3 lines 5-25, col. 5 lines 10-20, each stream's class is recognized by available or supported audio, video coding algorithms, col. 5 lines 61-62, many streams in one class);

means, operatively coupled to the one or more processors, for determining a plurality of acceptable transfer rates for the particular data stream (col. 3 lines 6-34, codecs for a plurality of available transmission rates for a audio/video flow);

means, operatively coupled to the one or more processors, for negotiating a transfer rate for the particular data stream, wherein the transfer rate is a selected one of the plurality of acceptable transfer rates (col. 3 lines 6-34, col. 4 lines 21-32, audio, video coding provides acceptable transfer rates (or bandwidth per stream) for each type of traffic);

Shaffer does not explicitly disclose

Wherein each class of the plurality of data classes corresponding to a node in a hierarchical policy tree; means, operatively coupled to the one or more processors, for detecting termination of a particular data stream; means, operatively coupled to the one or more processors, for determining whether another data stream from said particular data class is able to use bandwidth that was allocated to said particular data stream in response to detecting termination of the particular data stream; means, operatively coupled to the one or more processors, for performing the steps of (a) in response to detecting that no data stream from said particular class is able to use bandwidth that was allocated to said particular data stream, selecting an existing data stream based, at least in part, on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy tree; and (b) increasing the bandwidth allocated to said existing data stream.

However, Packer discloses



Wherein each class of the plurality of data classes corresponding to a node in a hierarchical policy tree (col. 14 lines 40-51, classification tree for traffic classes, 3.2, policies);

means, operatively coupled to the one or more processors, for detecting termination of a particular data stream; means, operatively coupled to the one or more processors, for determining whether another data stream from said particular data class is able to use bandwidth that was allocated to said particular data stream in response to detecting termination of the particular data stream (col. 13 lines 45-60, excess information rate EIR allows freed bandwidth from a terminated flow to be reallocated to other flows, until demand is satisfied meaning no need for more bandwidth for other flows, based on bandwidth availability);

means, operatively coupled to the one or more processors, for performing the steps of

(a) in response to detecting that no data stream from said particular class is able to use bandwidth that was allocated to said particular data stream (col. 13 lines 45-60, other flows' bandwidth demand is satisfied), selecting an existing data stream based, at least in part, on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy tree; and (b) increasing the bandwidth allocated to said existing data stream (col. 11 line 39 to col. 12 line 16, bandwidth classification tree is an *N-ary tree with its nodes ordered by specificity*, each "tier" or layer in the tree corresponds is ordered to a *orthogonal paradigm* at a specificity level; col. 14 lines 32-

37, soft isolation, free or unused bandwidth can be allocated or shared among different data classes relatively located in a traffic classification tree; col. 14 lines 32-37, soft isolation, free or unused bandwidth can be allocated or shared among different data classes in a traffic classification tree).

It would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Shaffer and Packer to take advantage of available bandwidth resources that has not been consumed by allocating excess bandwidth to data stream as available (Packer, col. 13 lines 41-43).

It would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Shaffer and Packer to take advantage of available bandwidth resources that has not been consumed by allocating excess bandwidth to data stream as available (Packer, col. 13 lines 41-43).

17. For claim 23, Shaffer discloses a method for allocating bandwidth of a data network to a plurality of data streams, comprising:

apportioning the bandwidth to a plurality of data classes (col. 5 lines 57-58, data and voice bandwidth apportionment, col.4 lines 45-48, fig. 4, 5, bandwidth threshold X, Y of traffics);

receiving a plurality of data streams each associated with one of the plurality of data classes (fig. 2, receiving video, audio or data traffics are classes);

from a plurality of acceptable transfer rates, negotiating a transfer rate for each data stream, wherein the transfer rate is limited to the bandwidth apportioned to the

data class associated with each data stream (col. 4 lines 21-32, col. 5 lines 10-20, audio, video coding algorithms provide acceptable transfer rates (or bandwidth per stream) for each type of traffic); and

transmitting the data streams on the data network at the negotiated transfer rates (col. 5 lines 43-45, adjusting coding algorithm to negotiated rate and transmitting at that rate);

Shaffer does not explicitly disclose:

each class of the plurality of data classes corresponding to a node in a hierarchical policy tree; detecting termination of a particular data stream; in response to detecting termination of the particular data stream, determining whether another data stream from said particular data class is able to use bandwidth that was allocated to said particular data stream; in response to detecting that no data stream from said particular class is able to use bandwidth that was allocated to said particular data stream, performing the steps of (a) selecting an existing data stream based, at least in part, on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy tree; and (b) increasing the bandwidth allocated to said existing data stream.

However, Packer discloses that excess bandwidth can be allocated to a flow based on available bandwidth or bandwidth that has not been consumed (col. 13 lines 38-60)

each class of the plurality of data classes corresponding to a node in a hierarchical policy tree (col. 14 lines 40-51, classification tree for traffic classes, 3.2, policies);

detecting termination of a particular data stream; in response to detecting termination of the particular data stream, determining whether another data stream from said particular data class is able to use bandwidth that was allocated to said particular data stream (col. 13 lines 45-60, excess information rate EIR allows freed bandwidth from a terminated flow to be reallocated to other flows, until demand is satisfied meaning no need for more bandwidth for other flows, based on bandwidth availability);

in response to detecting that no data stream from said particular class is able to use bandwidth that was allocated to said particular data stream (col. 13 lines 45-60, other flows' bandwidth demand is satisfied), performing the steps of

(a) selecting an existing data stream based, at least in part, on where the node that corresponds to the data class of the existing data stream is, within the hierarchical policy tree, relative to where the node of said particular class is, within said hierarchical policy tree; and (b) increasing the bandwidth allocated to said existing data stream (col. 11 line 39 to col. 12 line 16, bandwidth classification tree is an *N-ary tree with its nodes ordered by specificity*, each "tier" or layer in the tree corresponds is ordered to a *orthogonal paradigm* at a specificity level; col. 14 lines 32-37, soft isolation, free or unused bandwidth can be allocated or shared among different data classes relatively located in a traffic classification tree; col. 14 lines 32-37, soft isolation, free or unused

bandwidth can be allocated or shared among different data classes in a traffic classification tree).

It would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Shaffer and Packer to take advantage of available bandwidth resources that has not been consumed by allocating excess bandwidth to data stream as available (Packer, col. 13 lines 41-43).

### ***Conclusion***

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hieu T. Hoang whose telephone number is 571-270-

1253. The examiner can normally be reached on Monday-Thursday, 8 a.m.-5 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571-272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HH

/Kenny S Lin/

Primary Examiner, Art Unit 2452